We claim:

1. A computer implemented method of predicting the likelihood of collecting on a delinquent debt on an account, the method comprising:

storing a predictive model of debt collection likelihood generated using historical data of delinquent debt accounts, the collection methods used in each account, and the success of the collection methods in each account;

receiving data of a currently delinquent debt account;

selecting a collection method; and

generating a signal indicative of the likelihood of collecting on the currently delinquent debt by applying the data of the currently delinquent debt account and the selected collection method to the predictive model.

2. The method of claim 1, wherein the delinquent debt was incurred on a credit card.

3. The method of claim 1, wherein the delinquent debt was incurred on a medical service.

4. The method of claim 1, wherein the delinquent debt was incurred on a utility bill.

5. The method of claim 1, wherein the delinquent debt was incurred on an unpaid check.

6. The method of claim 1, wherein the delinquent debt was incurred on mail-ordered goods.

7. The method of claim 1, wherein the delinquent debt was incurred on an electronic transaction via the Internet.

8. The method of claim 1, wherein the delinquent debt has been charged-off.

9. The method of claim 1, wherein the collection methods include a set of different letters that can be sent to delinquent debtors.

10. The method of claim 1, wherein the collection methods include different times at which a letter can be sent to delinquent debtors.

11. The method of claim 1, wherein the collection methods include different phone call approaches.

12. The method of claim 1, wherein the collection methods include different debt lifecycle stages when phone calls may be made.

13. The method of claim 1, wherein the collection methods include different debt

lifecycle stages at which a letter can be sent to delinquent debtors.

14. The method of claim 1, wherein the collection methods include different days of the week during which phone calls may be made.

15. The method of claim 1, wherein the collection methods include different monthly dates during which phone calls may be made.

16. The method of claim 1, wherein the collection methods include different hours of the day during which phone calls may be made.

17. The method of claim 1, wherein the collection methods include different collections specialists who may be assigned to work the account.

18. The method of claim 1, wherein the collection methods include electronic communications that may be made with the debtor.

19. The method of claim 1, wherein the collection methods include offering debt counseling.

20. The method of claim 1, wherein the collection methods include debt rescheduling.

21. The method of claim 1, wherein the collection methods include offering additional credit.

22. The method of claim 1, wherein the collection methods include changing delinquency financial penalties for an account.

23. The method of claim 1, wherein the collection methods include offering debt forgiveness.

24. The method of claim 1, wherein the collection methods include a search for a missing debtor.

25. The method of claim 1, wherein the collection methods include legal actions.

26. The method of claim 1, wherein the collection methods include the employment of a collection agency.

27. The method of claim 1, wherein the collection methods include the sale of a debt.

28. The method of claim 1, wherein the historical data includes information regarding an account before the account became delinquent.

29. The method of claim 1, wherein the historical data includes account purchase information.

30. The method of claim 1, wherein the historical data includes information regarding

the Merchant Category Code of purchases on the account.

31. The method of claim 1, wherein the historical data includes information regarding the amount of account purchases.

32. The method of claim 1, wherein the historical data includes information regarding account cash transactions.

33. The method of claim 1, wherein the historical data includes information regarding account payments made.

34. The method of claim 1, wherein the historical data includes events related to previous collection activities.

35. The method of claim 1, wherein the historical data includes collectors' notes related to previous collection activities.

36. The method of claim 35, wherein the collectors' notes use preformatted codes.

37. The method of claim 35, wherein the collectors' notes use a natural language format.

38. The method of claim 35, further comprising:

transforming the collectors' notes into a mathematical representation that encodes contextual similarity of terms contained in the collector's notes.

39. The method of claim 38, further comprising creating the mathematical representation using a vector model.

40. The method of claim 38, further comprising creating the mathematical representation by determining co-occurrence statistics of terms contained in the collector's notes.

41. The method of claim 38, wherein the mathematical representation is created using context vector methodology.

42. The method of claim 1, further comprising:

segmenting a portfolio of accounts into a plurality of segments; and

providing a different predictive model for each segment.

43. The method of claim 42, wherein each segment is based on the time period for which an account has been delinquent.

44. The method of claim 42, wherein each segment is based on the credit-worthiness of the holder of a delinquent debt account.

45. The method of claim 42, wherein each segment is based on the type of debt of an account.

46. The method of claim 42, wherein each segment is based on the history of collection activities for an account.

47. The method of claim 42, wherein each segment is based on a statistical clustering of accounts having similar charactistics.

48. The method of claim 42, wherein each segment is based on the amount owed on an account.

49. The method of claim 42, wherein each segment is based on the collectors' notes for an account.

50. The method of claim 42, wherein each segment is based on a determination of whether a debt on an account has been charged-off.

51. The method of claim 42, wherein each segment is based on the number of collection agencies that have attempted to collect on the debt account.

52. A computer implemented method for developing a predictive model for a delinquent debt account, comprising the operations of:

receiving for a plurality of accounts, historical data for transactions occurring over a period of time;

receiving for the plurality of accounts, the collection methods used on the accounts and the amount collected on each account; and

creating the predictive model using the historical transaction data, the collection methods used, and the amount collected on each account.

53. The method of claim 52, wherein the predictive model is a neural network model.

54. The method of claim 52, wherein the predictive model is a regression analysis model.

55. The method of claim 52, wherein the predictive model is an integrated rules system model.

56. The method of claim 52, wherein the predictive model is a decision tree model.

57. The method of claim 52, wherein the predictive model predicts a collection amount on a delinquent debt account.

58. The method of claim 52, wherein the predictive model predicts the likelihood of collecting on a delinquent debt account.

59. The method of claim 52, wherein the predictive model predicts the optimal collection specialist to collect on a delinquent debt account.

60. The method of claim 52, wherein the predictive model predicts which delinquent debt accounts will self-cure.

61. The method of claim 52, wherein the predictive model predicts which accounts will become straight-roller accounts.

62. The method of claim 52, wherein the predictive model predicts the optimal method of communicating with a delinquent debtor.

63. The method of claim 52, wherein the predictive model predicts when an account should be shut off.

64. The method of claim 52, wherein the predictive model predicts a best time to contact a delinquent debtor.

65. A computer implemented method of predicting the likelihood of collecting on a delinquent debt on an account, the method comprising:

storing a predictive model of debt collection likelihood generated using historical data of delinquent debt accounts, profiles of delinquent debt accounts that summarize patterns of events in the accounts, and the success of the collection effort in each account;

receiving data regarding a currently delinquent debt account;

obtaining a profile that summarizes patterns of events in the delinquent debt account; and

generating a signal indicative of the likelihood of collecting on the currently delinquent debt by applying the data of the currently delinquent debt account and the profile to the predictive model.

66. The method of claim 65, wherein the profile is initialized using account masterfile information.

67. The method of claim 65, wherein the profile includes account events that predate the delinquency status of the account.

68. The method of claim 65, wherein the profile includes account transaction purchase information.

69. The method of claim 65, wherein the profile includes account transaction merchant category code information.

70. The method of claim 65, wherein the profile includes account transaction amount information.

71. The method of claim 65, wherein the profile includes account cash withdrawal transaction information.

72. The method of claim 65, wherein the profile includes account payment history information.

73. The method of claim 65, wherein the profile includes events related to promises to pay made by the account debtor.

74. The method of claim 65, wherein the profile includes events related to a phone call made by a collector to the account debtor.

75. The method of claim 65, wherein the profile includes events related to a letter sent to the account debtor.

76. The method of claim 65, wherein the profile includes events related to a phone call made by the account debtor.

77. The method of claim 65, wherein the profile includes events related to a letter sent by the account debtor.

78. The method of claim 65, wherein the profile includes events related to a bankruptcy filing by the account debtor.

79. The method of claim 65, wherein the profile includes events related to an inability to locate the account debtor.

80. The method of claim 65, wherein the profile includes events related to a change in the employment status of the account debtor.

81. The method of claim 65, wherein the profile includes events related to a medical condition of the account debtor or family members of the account debtor.

82. The method of claim 65, wherein the profile includes events related to a change in a financial burden of a holder of the account.

83. The method of claim 65, wherein the profile includes events related to an account holder disclaiming responsibility for a debt.

84. The method of claim 65, wherein the profile includes events related to information gathered from a third party organization.

85. The method of claim 84, wherein the third party organization is a credit-reporting agency.

86. The method of claim 84, wherein the third party organization is a bankruptcy-reporting agency.

87. The method of claim 84, wherein the third party organization is an office of public records.

88. The method of claim 84, wherein the third party organization is a marketing data supplier.

89. The method of claim 84, wherein the third party organization performs a skip trace.

90. The method of claim 84, wherein the third party organization is a law enforcement authority.

91. The method of claim 84, wherein the third party organization is a legal professional.

92. The method of claim 65, wherein the profile includes events related to previous collection activities performed on the account.

93. The method of claim 92, wherein events related to previous collection activities are obtained from collectors' notes.

94. The method of claim 93, wherein the collectors' notes use preformatted codes.

95. The method of claim 93, wherein the collectors' notes use a natural language format.

96. The method of claim 93, wherein the collectors' notes are transformed into a mathematical representation.

97. The method of claim 96, wherein the mathematical representation is created using a vector model.

98. The method of claim 96, wherein the mathematical representation is created using context vector methodology.

99. A computer implemented method for developing a predictive model for a delinquent debt account, comprising the operations of:

receiving for a plurality of accounts, historical transaction data of delinquent debt accounts, events that have occurred in the history of each debt account, and the success of collection efforts, wherein success is the amount collected;

for each of the accounts, creating a profile summarizing patterns of the transactions data and the events in the account; and

creating the predictive model using the historical transaction data, the profiles, and the success of the collection efforts.

100. The method of claim 99, wherein the predictive model is a neural network model.

101. The method of claim 99, wherein the predictive model is a regression analysis model.

102. The method of claim 99, wherein the predictive model is an integrated rules system model.

103. The method of claim 99, wherein the predictive model is a decision tree model.

104. A computer implemented method for modeling textual information about a delinquent debt account, the method consisting of:

receiving text notes taken by collectors who have worked on the account;

transforming the text into a mathematical representation of conceptual relationships among collection notes; and

generating a signal modeling the text using the mathematical representation.

105. The method of claim 104, wherein the signal modeling the text notes is used as an input for a predictive model of debt collection likelihood.

106. The method of claim 104, wherein the signal modeling the text notes is included in a profile that summarizes patterns of events in the delinquent debt account.

107. The method of claim 104, wherein text notes use preformatted codes to describe events.

108. The method of claim 104, wherein text notes use a natural language format.

109. The method of claim 104, wherein the step of transforming the text notes into a mathematical representation further includes:

constructing a set of documents from the text collectors' notes;

determining co-occurrences between words in the set of documents and deriving a set of context vectors from the co-occurrences, each context vector associated with a word; and

generating for a current account document a document vector using the context vectors associated with words in the collector's notes of the current account document.

110. The method of claim 109, wherein a document vector is used as input into a predictive model for delinquent debt collection.

111. The method of claim 109, wherein transforming the text notes into a mathematical representation further includes:

grouping document vectors into clusters of similar contextual information and selecting cluster centroid vectors; and

projecting a current account's document vector onto each cluster centroid vector to determine which clusters the document most resembles.

112. The method of claim 111, wherein the projections of a document vector onto a cluster centroid vector are used as input into a predictive model for delinquent debt collection.

113. The method of claim 109, wherein constructing a set of documents from the notes further includes:

performing a data-cleansing step to standardize each document and retain informative word stems.

114. The method of claim 109, wherein each document is constructed from an individual collector's note.

115. The method of claim 109, wherein each successive collector's note on an account is appended to the previous notes on the account to form the current account document.

116. A computer implemented method of estimating the value of a delinquent debt, the method comprising:

storing a predictive model of debt collection likelihood generated using historical data of delinquent debt accounts, the collection methods used in each account, and the success of the collection methods in each account;

receiving data of a currently delinquent debt account;

calculating the likelihood of collecting on the currently delinquent debt given a

particular collection method using the predictive model;

calculating the time until the debt will be collected;

estimating the cost of the particular collection method; and

generating a signal indicative of the value of the delinquent debt using the likelihood of collecting on the currently delinquent debt account, the time until collection, and the cost of the collection method.

117. The method of claim 116, further including:

calculating the likelihood of collecting on the currently delinquent debt for a plurality of different collection methods using the predictive model;

calculating the value of the currently delinquent debt for the plurality of different collection methods; and

selecting as the optimal collection method the method that produces the highest value for the delinquent debt.

118. The method of claim 116, wherein the value of the delinquent debt is computed according to the equation:

$$Value = \frac{Recoveries - Cost\_of\_recovering}{(1 + Discount\_Rate)^n}$$

wherein:

Recoveries represents the likelihood of recovering on the delinquent debt times the face value of the debt;

Cost_of_recovering represents the cost of the collection method;

Discount_Rate represents the time-value-of-money discount rate for each unit of time; and

n represents a statistically estimated number of units of time that will pass until the debt is collected.

119. The method of claim 116, wherein generating a signal indicative of the value of the delinquent debt further includes:

using the probability of attrition by the account holder given the particular collection action.

120. The method of claim 116, wherein the cost of the particular collection action is estimated using historical debt collection industry information.

121. A computer implemented method of estimating the suitability of a collector to collect on a delinquent debt account, the method comprising:

storing a predictive model of collector suitability generated using historical data of delinquent debt accounts, data about the collector used on each account, and the success of the collection methods in each account;

receiving data of a currently delinquent debt account;

selecting a collector; and

generating a signal indicative of the likelihood of collecting on the currently delinquent debt by applying the data of the currently delinquent debt account and the selected collector to the predictive model.

122. The method of claim 121, wherein the data about the collector used on each account includes the identity of each collector.

123. The method of claim 121, wherein the data about the collector used on each account includes a set of parameters describing each collector.

124. A computer implemented method for developing a predictive model for determining the suitability of a collector for collecting on a delinquent debt account, comprising the operations of:

receiving for a plurality of accounts, historical data for transactions occurring over a period of time;

receiving for the plurality of accounts, data about the collector used to collect on each account and the success of the collection efforts, wherein success is the amount collected; and

creating the predictive model using the historical transaction data, data about the

collector used, and the success of the collection efforts.

125. A computer implemented method of predicting the likelihood of collecting on a delinquent debt on an account, the method comprising:

storing a predictive model of debt collection likelihood generated using historical data of delinquent debt accounts, the set of collection actions used in each account, and the success of the collection actions in each account;

receiving data of a currently delinquent debt account;

selecting a sequence of collection actions; and

generating a signal indicative of the likelihood of collecting on the currently delinquent debt using the selected sequence of collection actions by applying the data of the currently delinquent debt and the selected sequence of collection actions to the predictive model.

126. The method of claim 125, wherein generating a signal indicative of the likelihood of collection on the currently delinquent debt further includes:

repeatedly applying the predictive model to each collection action in the sequence of collection actions to generate a set of signals indicative of the likelihood of collecting; and

summarizing the set of signals to produce a final signal indicative of the likelihood of

collecting for the sequence of collection actions.

127. A computer implemented method for developing a predictive model for a delinquent debt account, comprising the operations of:

receiving for a plurality of accounts, historical data for transactions occurring over a period of time;

receiving for the plurality of accounts, the set of collection actions used on each account and the success of the collection actions used on each account, wherein success is measured by the amount collected; and

creating the predictive model using the historical transaction data, the set of collection actions used, and the success of the collection actions in each account.

128. The method of claim 127, wherein each set of collection actions is defined as a different group of actions.

129. The method of claim 127, wherein each set of collection actions is defined as a group of actions that occur in a different sequence in time.

130. The method of claim 127, wherein each set of collection actions is defined as a different group of actions occurring within a predetermined window of time.

131. A computer implemented method of pricing a portfolio of delinquent debts, the

method comprising:

selecting an optimal set of collection actions for each account in the portfolio of delinquent debts using a predictive model generated using historical data of delinquent debt accounts, the collection methods used in each historical account, and the success of the collection methods in each historical account;

estimating the likelihood of collecting on each account in the portfolio using the predictive model;

estimating the cost of the collection actions taken in each account in the portfolio;

calculating a value for each account in the portfolio using the likelihood of collection and the cost of collection actions; and

calculating a portfolio value, wherein the portfolio value is the sum of the values of each account in the portfolio.

132. A system for predicting the likelihood of collecting on a delinquent debt on an account, comprising:

a predictive model for predicting the likelihood of collecting on a delinquent debt account;

a set of information regarding delinquent debt accounts, including a mathematical representation of the collectors' notes for each account; and

a debt collection facility, wherein the debt collection facility applies the

information regarding delinquent debt accounts to the predictive model and uses the model results to make decisions regarding the delinquent debt accounts.

133. The system of claim 132, wherein the predictive model is implemented on a standard computer system.

134. The system of claim 132, wherein the information regarding delinquent debt accounts is obtained from a financial data facility.

135. The system of claim 132, wherein the information regarding delinquent debt accounts is obtained from a collection efforts data facility.

136. The system of claim 132, wherein the functions of the debt collection facility are implemented automatically via a computer system.